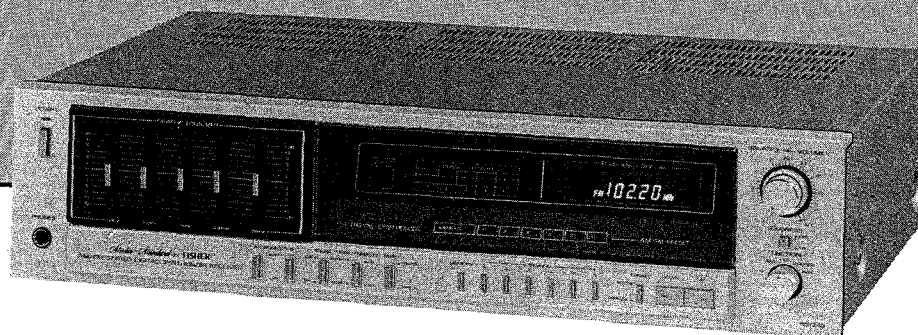


SERVICE MANUAL

FISHER

RS-245

**AM/FM Stereo Digital
Synthesizer Receiver
(EUROPE)**



The first name in high fidelity

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SPECIFICATIONS

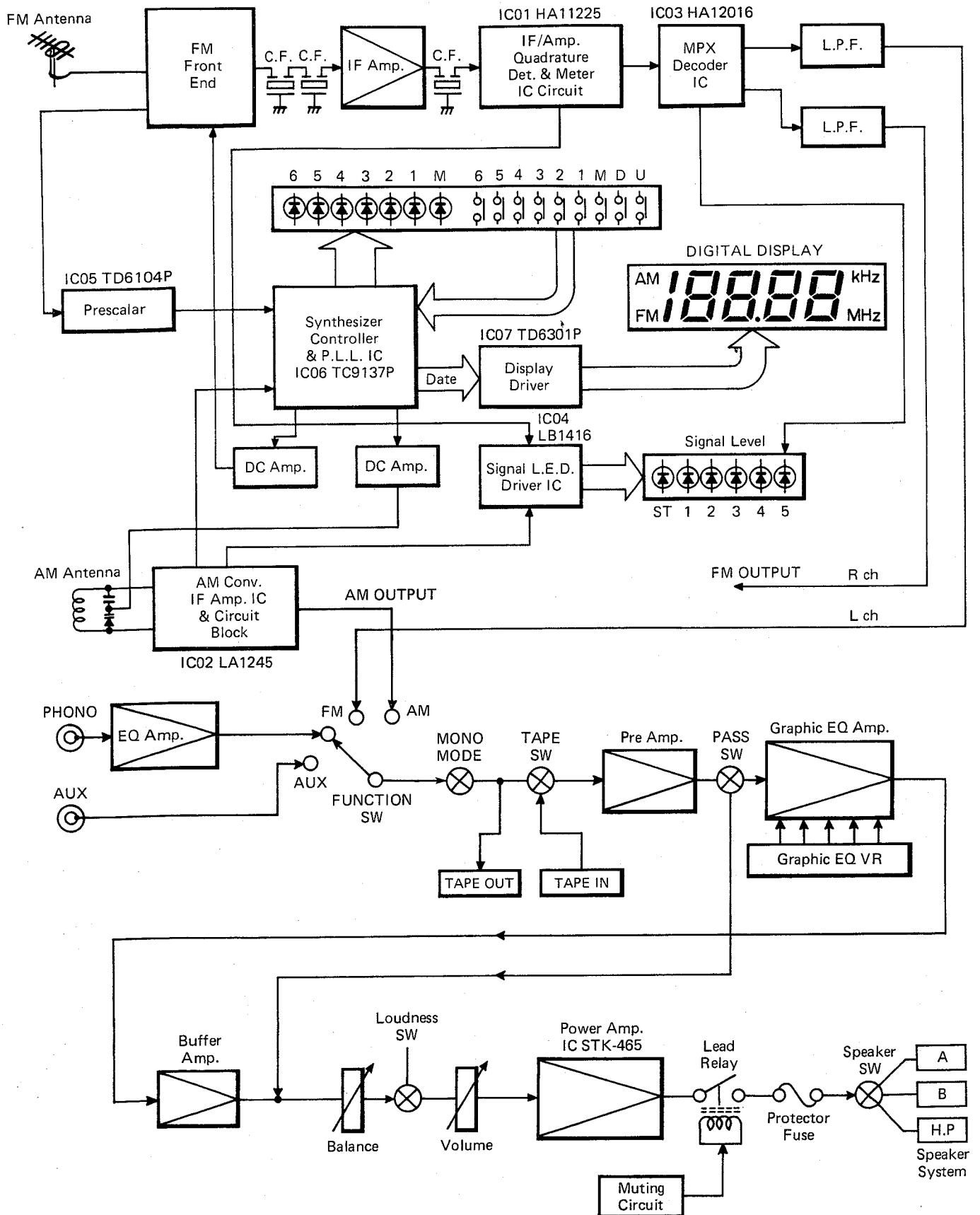
RECEIVER	RS-245
POWER AMPLIFIER SECTION	
Minimum RMS sine wave power per channel within stated bandwidth at no more than stated distortion and with 8 ohm load	30 Watts
Power Bandwidth	20 Hz – 20 kHz
Total Harmonic Distortion	0.07 %
I.M. Distortion	0.07 %
Speaker Damping	> 40
PRE AMPLIFIER SECTION	
Frequency Response	
Phono (RIAA)	±1.0 dB
Aux (20 Hz – 20 kHz)	±1.0 dB
Input Sensitivity and Impedance	
Phono	2.5 mV/50k ohms
Tape	150 mV/50k ohms
Aux	150 mV/50k ohms
Max. Input Level	
Phono (1 kHz)	130 mV

SPECIFICATIONS

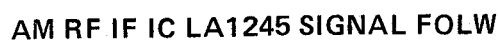
PRE AMPLIFIER SECTION	
Output Voltage and Impedance	
Tape Out (Rated Output)	150 mV/5k ohms
Graphic Equalizer Controls	
50 Hz	±10 dB
250 Hz	±10 dB
1 kHz	±10 dB
4.5 kHz	±10 dB
15 kHz	±10 dB
Loudness Contour (100 Hz/10 kHz)	+8 dB/+4 dB
Hum and Noise (IHF A Weighted, Inputs Shorted)	
Phono	70 dB
Aux/Tape	90 dB
FM TUNER SECTION	
Usable Sensitivity	
Mono	2.8 μ V/14.14 dBf
Stereo	6.5 μ V/21.45 dBf
50 dB Quieting Sensitivity	
Mono	6.5 μ V/21.45 dBf
Stereo	50 μ V/39.17 dBf
Signal-to-Noise Ratio	
Mono	66 dB
Stereo	62 dB
Capture Ratio	1.0 dB
Alt. Channel Selectivity (\pm 400 kHz)	60 dB
Image Response Ratio	50 dB
Spurious Response Ratio	70 dB
IF Response Ratio	90 dB
AM Suppression Ratio	55 dB
T.H.D. at 65 dBf	
Mono	0.2 %
Stereo	0.4 %
T.H.D. at 50 dB Quieting Sensitivity	
Mono	0.4 %
Stereo	0.5 %
Stereo Separation (100 Hz/1 kHz/10 kHz)	35/45/30 dB
Sub-Carrier Prod. Rej. (19/38 kHz)	46/46 dB
Audio Freq. Response (20 Hz – 15 kHz)	\pm 1.0 dB
AM TUNER SECTION	
Usable Sensitivity	300 μ V/m
Selectivity (\pm 10 kHz)	40 dB
Signal-to-Noise Ratio	55 dB
Image Response Ratio	50 dB
IF Response Ratio	45 dB
GENERAL	
Power Requirements (50 Hz)	110/220V AC
AC Outlets	2
Dimensions (W x H x D)	17-1/3" x 4-1/8" x 11-3/4"
Weight (approx.)	18 lbs.

* Because its products are subject to continuous improvement, Fisher Corporation reserves the right to modify product designs and specifications without notice and without incurring any obligation.

FUNCTIONAL BLOCK DIAGRAM

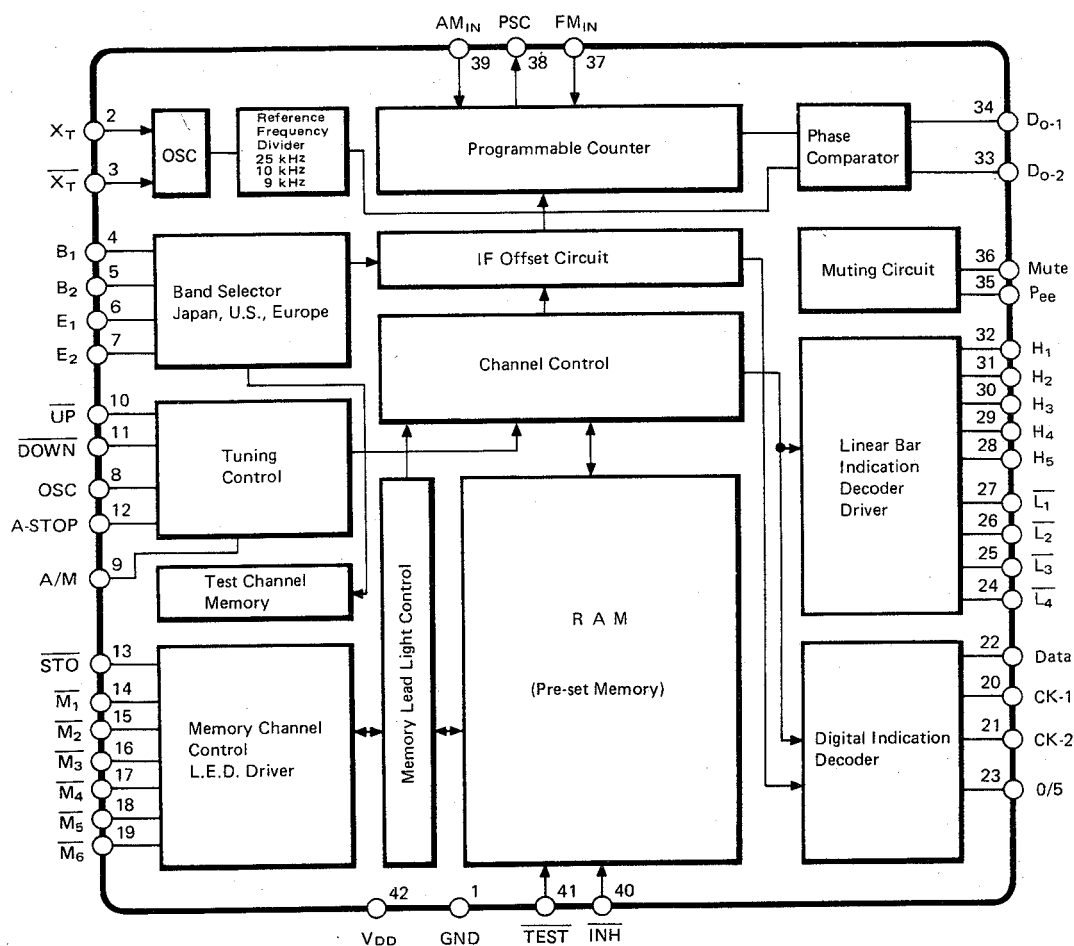


FM IF IC HA11225 SIGNAL FLOW

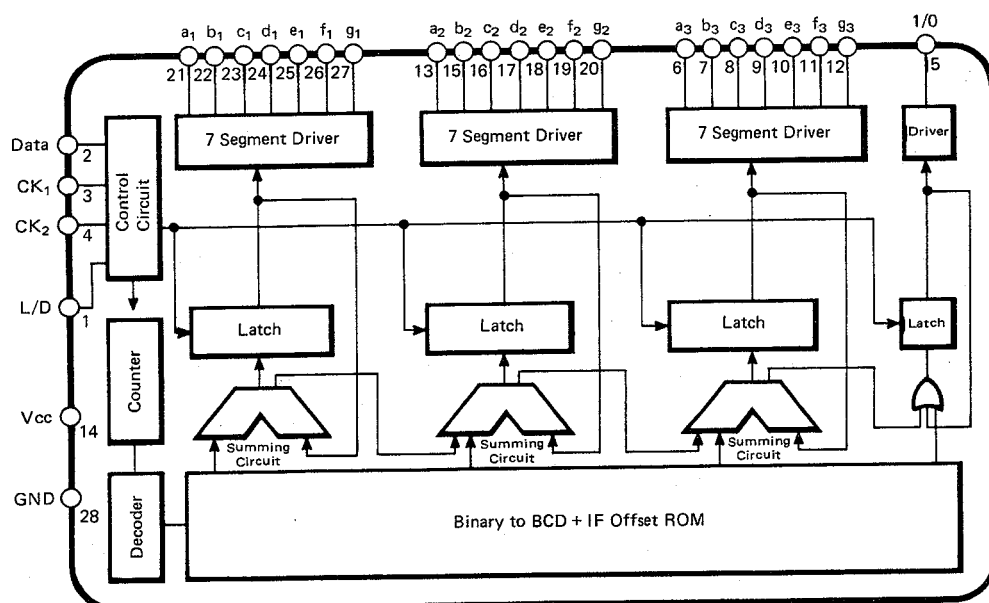


IC EQUIVALENT CIRCUIT & BLOCK DIAGRAM (Continued)

PLL CONTROL IC TC9137P SIGNAL FLOW

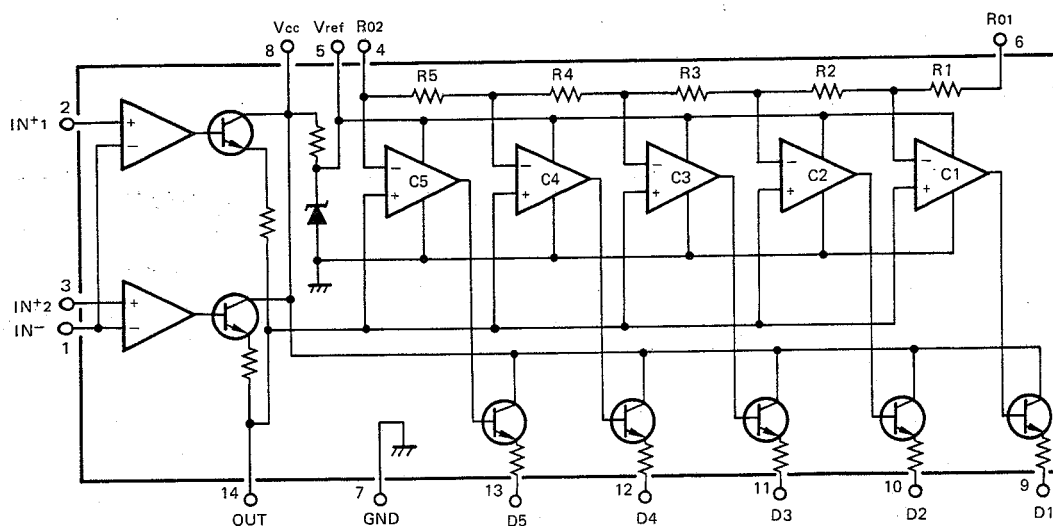


STATIC DRIVER IC TD6301P SIGNAL FLOW

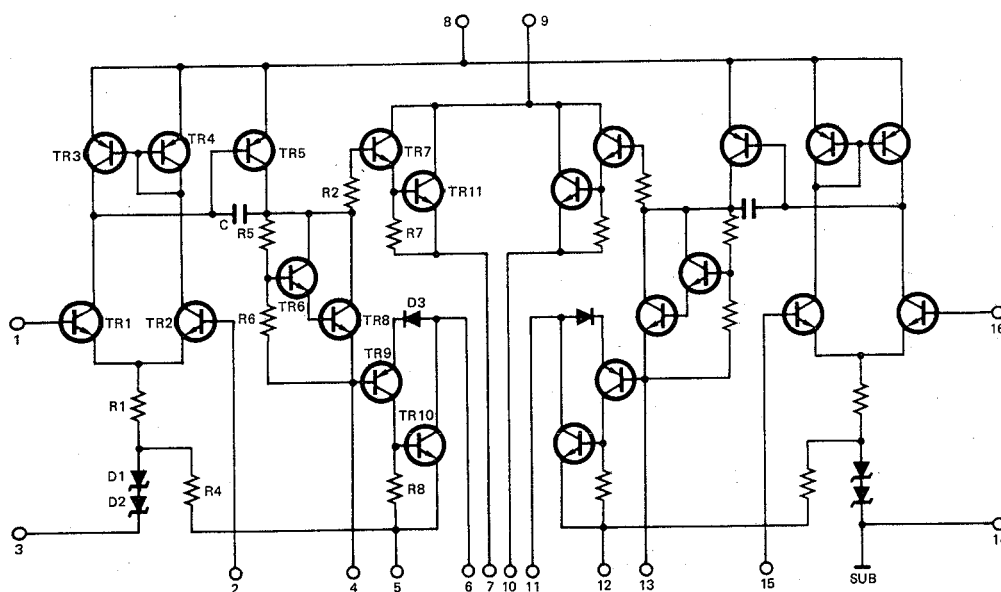


IC EQUIVALENT CIRCUIT & BLOCK DIAGRAM (Continued)

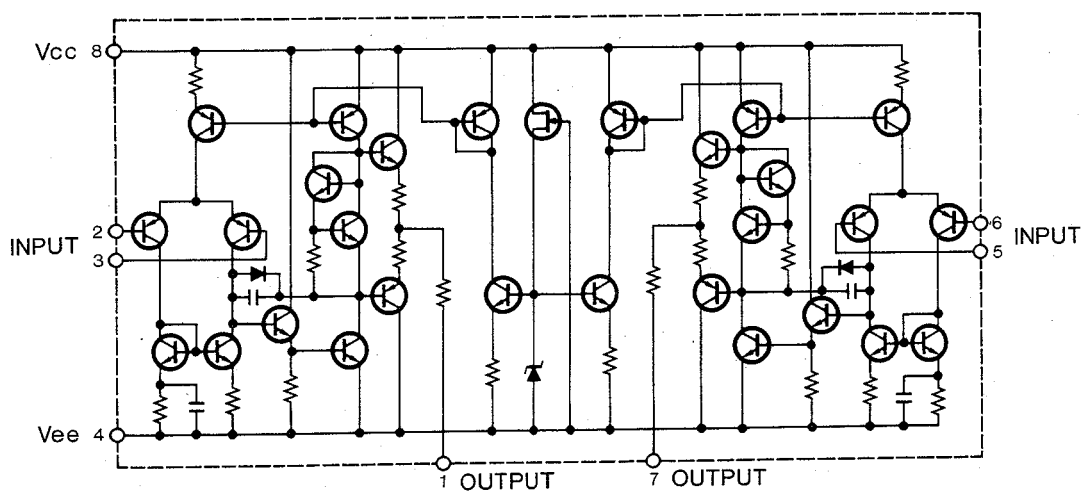
LEVEL METER IC LB1416



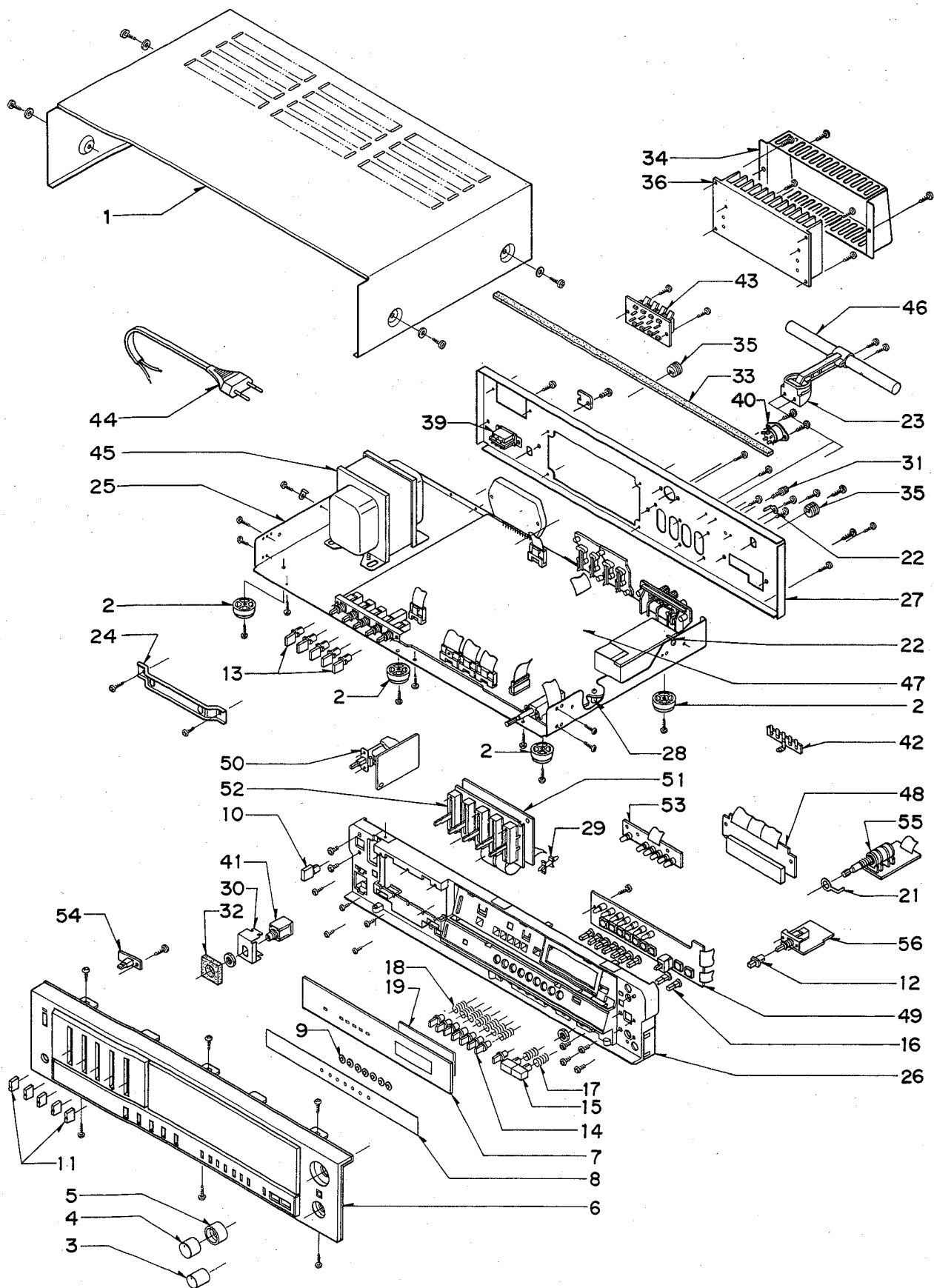
POWER AMPLIFIER IC STK465SA



DC AMP IC NJM4558



CABINET & CHASSIS EXPLODED VIEW



PARTS LIST

PACKING PARTS LIST

Ref. No.	Parts Number	Description
	131 6 1169 04500	Box Corrugate-EXP
	131 6 2119 02091	Bag Polyethylene-EXP
	131 0 6001 13200	Pad Assy, Right
	131 0 6001 13201	Pad Assy, Left
	131 6 3069 16350	Patching Sheet

ACCESSORIES PARTS LIST

Ref. No.	Parts Number	Description
	4 2449 20230	Antenna FM
	131 6 2719 10801	Bag Fan
	131 6 4119 86307	Explanatory Booklet
	131 6 4519 15700	Guarantee Certificate

CABINET PARTS LIST

Ref. No.	Parts Number	Description
1	131 2 1410 26500	Cover
2	131 2 1801 14100	Leg

APPEARANCE PARTS LIST

Ref. No.	Parts Number	Description
3	131 0 1001 55402	Knob (Function)
4	131 0 1001 56902	Knob (Volume)
5	131 0 1001 59902	Knob (Balance)
6	131 0 1016 39204	Panel Decorative Assy
	131 2 1202 19300	Escutcheon Dial
	131 2 1203 53404	Panel Control
	131 2 1205 26000	Decorative Plate Dial
	131 2 1311 47900	Sash
	131 2 5207 13700	Cloth
	131 2 6113 37900	Shelter (Headphone)
	131 2 6113 43000	Shelter (Power Switch)
	131 2 6113 43100	Shelter (Push Switch)
	131 2 6113 45200	Shelter (Loudness)
	131 2 6113 45300	Shelter (Touch Switch)
7	131 2 1201 36802	Plate Dial
8	131 2 1203 53502	Panel Control
9	131 2 1503 15500	Decorative Sign
10	131 2 1601 69300	Knob (Power Switch)
11	131 2 1601 69400	Knob (EQ)
12	131 2 1601 69600	Knob (Loudness)
13	131 2 1601 72400	Knob (SP Select)
14	131 2 1601 75400	Knob (Memory, Manual/Auto)
15	131 2 1601 75500	Knob (Up, Down)
16	131 2 4219 15200	Shaft (Knob)
17	131 2 5101 20700	Spring (Up, Down, Knob)
18	131 2 5101 20800	Spring (Memory Knob)
19	131 2 6308 19900	Filter

CHASSIS PARTS LIST

Ref. No.	Parts Number	Description
21	4 2372 01020	Lug
22	4 2379 21520	Terminal Lug 1P
23	131 0 3008 11801	Support Antenna Assy
24	* 131 2 3101 71300	Metal Mount (IC)
25	* 131 2 3301 27900	Chassis
26	* 131 2 3305 32800	Panel Front
27	* 131 2 3306 33906	Panel Rear
28	* 131 2 3614 20300	Mount P.C.B.
29	* 131 2 3614 22200	Mount P.C.B. (EQ P.C.B.)
30	* 131 2 3624 13200	Mount Headphone Jack
31	131 2 4201 17800	Screw (GND)
32	131 2 4208 20400	Spacer (Headphone Jack)
33	131 2 5205 15300	Cushion (Panel Rear)
34	131 2 1410 25400	Cover (Heat Sink)
35	131 2 6111 14200	Bushing
36	131 2 6201 29200	Plate Heat Sink

ELECTRICAL PARTS LIST

Ref. No.	Parts Number	Description
39	⚠ 4 2312 01020	Switch Slide
40	4 2359 20191	Socket 5P (DIN)
41	4 2352 00710	Headphone Jack 3P
42	4 2372 00490	Terminal Lug 1-4PT
43	4 2379 21560	Terminal 8P
44	⚠ 4 2432 00140	Line Cord
45	⚠ 4 2512 17220	Power Transformer
46	4 2579 25280	Bar Antenna MW
47	* 131 0 4001 08432	RF/IF/AF P.C.B. Assy
48	* 131 0 4001 08420	Digitron P.C.B. Assy
49	* 131 0 4001 08470	Preset Switch P.C.B. Assy
50	* 131 0 4001 07362	Power Switch P.C.B. Assy
51	* 131 0 4001 07370	EQ P.C.B. Assy
52	* 131 0 4001 07381	Volume Array P.C.B. Assy
53	* 131 0 4001 08480	L.E.D. Indicator P.C.B. Assy
54	* 131 0 4001 08460	L.E.D. P.C.B. Assy
55	* 131 0 4001 08450	Master VR P.C.B. Assy
56	* 131 0 4001 08440	Loudness Switch P.C.B. Assy
C01	C1CRE-476A	Electrolytic 47 μ F 16V
D01	205 5 9040 44210	Diode, DS-442
R01	R2EDPJ103A	Carbon 10k 1/4W \pm 5%
R02	R2EDPJ152A	Carbon 1.5k 1/4W \pm 5%

* —Not a service part.

PRODUCT SAFETY NOTICE

PRODUCT SAFETY SHOULD BE CONSIDERED WHEN A COMPONENT REPLACEMENT IS MADE IN ANY AREA OF AN UNIT. COMPONENTS INDICATED BY A MARK ⚠ IN THIS PARTS LIST AND THE SCHEMATIC DIAGRAM SHOW COMPONENTS WHOSE VALUE HAS SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. IT IS PARTICULARLY RECOMMENDED THAT ONLY PARTS SPECIFIED ON THE FOLLOWING PARTS LIST BE USED FOR COMPONENT REPLACEMENT POINTED OUT BY THE MARK.

RECOMMENDED TEST EQUIPMENTS

The following test equipments are recommended to completely test and align the Amplifier:

- Line Voltage Isolation Transformer
- AC DC Multimeter.
- Accurately Calibrated AC Voltmeter.
- Oscilloscope (Flat to 100 kHz Minimum)
- Low-Distortion Audio Sine-Wave Generator
- Harmonic Distortion Analyzer
- Two (2) Load Resistors 8-ohms, 250 Watts (Minimum Rating)

HARMONIC DISTORTION TEST

CAUTION: Limit the following tests to no more than ten minutes each. Use 8-ohm resistors, with a minimum power rating of 250 watts when connecting a load across the SPEAKERS terminal.

CONTROL SETTINGS:

Unplug the AC power cord and set the front panel controls as follows:

- GRAPHIC EQUALIZER and BALANCE controls to center positions.
- POWER switch to OFF
- SPEAKERS switch to OFF
- FUNCTION switch to AUX
- TAPE MONITOR switch to SOURCE
- MONO MODE, LOUDNESS CONTOUR switch to OFF
- VOLUME control to MINIMUM position
- LEFT CHANNEL DRIVEN

ONE CHANNEL DRIVEN:

- 1) Connect a low distortion audio generator to LEFT AUX IN jack. Set generator frequency to 1 kHz and output to minimum.
- 2) Connect an 8-ohm load resistor between SPEAKERS A LEFT and COM terminals. Connect a Harmonic Distortion Analyzer and an AC VTVM in parallel across the 8-ohm load.
- 3) Connect the AC power cord and set SPEAKERS switch to MAIN. Turn VOLUME control to MAX.
- 4) Increase generator output for 30 Watts RMS (15.5 V across the 8-ohm load). Harmonic Distortion Analyzer should measure 0.07 % distortion or less.
- 5) Repeat steps 1 through 4 for RIGHT CHANNEL.

BOTH CHANNELS DRIVEN

Connect 8-ohm load resistors across LEFT and RIGHT MAIN SPEAKERS terminals. Set MODE switch to "MONO". Adjust generator output and "BALANCE" control for 30 Watts at Left and Right Channels (15.5 volts across the 8-ohm loads). Harmonic Distortion Analyzer should measure 0.07 % distortion or less at each channel.

CAUTION:	This precision high-fidelity instrument should be serviced only by qualified personnel, trained in the repair of transistor equipment and printed circuitry.
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RECOMMENDED TEST EQUIPMENTS

The following test equipment is recommended to completely test and align the tuner.

- Line Voltage Isolation Transformer
- AC DC Multimeter
- Accurately Calibrated AC Voltmeter
- Oscilloscope (Flat to 100 kHz Minimum)
- Signal Generator for AM
- IF Gene-scope
- Loop Antenna for AM
- Signal Generator for FM
- Multiplex Generator
- Dummy Antenna for FM

CONTROL SETTINGS:

VOLUME Control Maximum (AM-IF and RF, FM-RF); Minimum (FM-IF)
 Balance Control Center
 Tape Monitor SW Source
 Loudness SW Off
 Graphic Equalizer Control Center

AM TUNER ALIGNMENT

AM ALIGNMENT – FUNCTION switch to AM position
 Maintain generator output as low as possible for suitable indications.

NOTE:
 Perform this alignment after FM Tuner Alignment.

ITEM	GENERATOR	DIAL SETTING	INDICATOR	PROCEDURE
1. AM (RF) TRACKING ALIGNMENT (522 kHz)	Do not connect generator.	Front Panel DIGITAL Counter Display Set to 522 kHz.	Connect DC Voltmeter to TP 1, and ground lead to Chassis.	Adjust AM OSC Coil until DC Voltmeter reads 1.2 V.
2. (1602 kHz)	Same as above	DIGITAL Counter Display Set to 1602 kHz.	Same as above	Adjust TC05 until DC Voltmeter reads 8.0 V.
Note: Repeat the adjustments in Items 1 and 2. Then, confirm that each voltage becomes 1.2 V – 8.0 V at receiving frequencies of 520 kHz – 1610 kHz.				
3. AM IF ALIGNMENT	Connect 450 kHz gene-scope output to Pin No. 1 and ground lead to Chassis.	DIGITAL Counter Display Set to 999 kHz.	Connect gene-scope input to TP 2. Connect ground lead to Chassis.	Adjust AM IFT (T10) for maximum gain and best symmetry.
4. AM (RF) TRACKING ALIGNMENT (603 kHz)	AM generator to EXT AM ANT and GND terminals Set to 603 kHz. Modulate with 400 Hz (30 % modulation).	DIGITAL Counter Display Set to 603 kHz.	Connect 8-ohm dummy load, AC V.T.V.M., and Oscilloscope to Ext. Speaker terminal.	Adjust Bar Antenna for maximum gain output.
5. (1404 kHz)	Change generator setting to 1404 kHz.	DIGITAL Counter Display Set to 1404 kHz.	Same as above	Adjust TC04 for maximum gain output.
6. AM AUTO STOP ADJUSTMENT	Change generator setting to 999 kHz and output level to 90 dB.	Set to 999 kHz.		Check that Auto Stop Function works at 999 kHz on DIGITAL Counter.
7. SIGNAL IND. LED ADJUSTMENT	Change generator output level to 100 dB.	Same as above	Front Panel SIGNAL IND. LED Display	Adjust VR04 until the fifth signal LED partly lights up.

FM TUNER ALIGNMENT

FM ALIGNMENT — FUNCTION switch to FM AUTO,
VOLUME control to minimum.

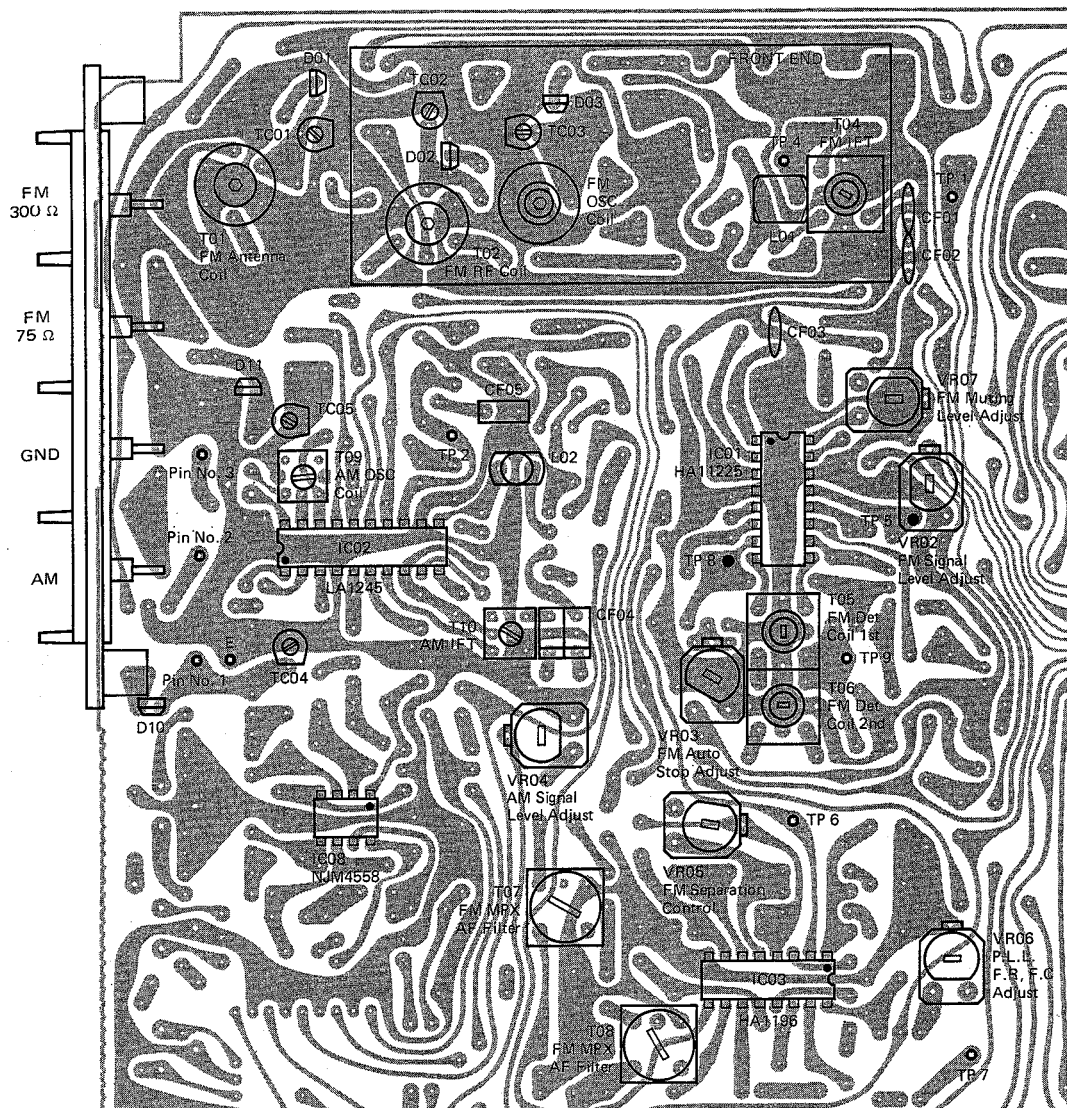
ITEM	GENERATOR	DIAL SETTING	INDICATOR	PROCEDURE
Note: The FM IF circuit utilizes a non-turnable ceramic filter which establishes the IF bandpass. To insure symmetrical tuning and selectivity, the IF must be aligned precisely to the center of the filter bandpass, rather than to 10.7 MHz as in conventional LC circuits.				
1. FM (RF) TRACKING ALIGNMENT (87.5 MHz)	Do not connect generator.	Front Panel DIGITAL Counter Display Set to 87.5 MHz.	Connect DC Voltmeter to TP 1, and ground lead to Chassis.	Adjust FM OSC Coil (T03) until DC Voltmeter reads 3.0 V.
2. (108 MHz)	Same as above	DIGITAL Counter Display Set to 108 MHz.	Same as above	Adjust TC03 until DC Voltmeter reads 21.0 V.
Note: Repeat the adjustments in Items 1 and 2. Then, confirm that each voltage becomes 3.0 V — 21.0 V at receiving frequencies of 87.5 MHz — 108 MHz.				
3. FM IF ALIGNMENT	Connect 10.7 MHz gene-scope output to TP 4 through Capacitor 10 pF.	DIGITAL Counter Display Set to 98 MHz.	Connect gene-scope input to TP 5, and ground lead to Chassis.	Adjust FM IFT (T04) for maximum gain and best symmetry.
4. S-CURVE CENTER ALIGNMENT	Same as above	Same as above	Scope vertical input to TP 6. Connect ground lead to Chassis.	Adjust FM DET 1st Coil (T05) for minimum gain and best linearity.
5. FM (RF) TRACKING ALIGNMENT (88 MHz)	Connect FM RF generator through FM Dummy ANTENNA to FM ANTENNA terminals. Set generator to 88 MHz.	Front Panel DIGITAL Counter Display Set to 88 MHz.	Connect 8-ohm dummy load, AC V.T.V.M., and Oscilloscope to Ext. speaker terminal.	Adjust FM ANT Coil (T01), RF Coil (T02) and IFT (T04) for maximum gain and minimum harmonic distortion.
6. (108 MHz)	Change generator setting to 108 MHz.	DIGITAL Counter Display Set to 108 MHz.	Same as above	Adjust TC01, TC02 for maximum gain and minimum harmonic distortion.
7. FINAL DETECTOR ALIGNMENT	Set generator output level to 12 dB at 98 MHz \pm 2 kHz.	DIGITAL Counter Display Set to 98 MHz.	Same as above	Adjust FM DET 1st Coil (T05) for minimum distortion.
	Change generator output level to 60 dB.			Adjust FM DET 2nd Coil (T06) for minimum distortion.
8. PLL IC FREE RUN FREQ. CONT. ADJUSTMENT	Same as above	Same as above	Connect Frequency Counter to TP 7.	Adjust VR06 in multiplex circuit to obtain 76 kHz \pm 800 Hz on Frequency Counter.
9. FM MUTING LEVEL ADJUSTMENT	Set generator to 98 MHz. Adjust ATT output for 8 μ V. (18 dB).	Same as above	Scope vertical input to Ext. Speaker terminal.	Set Function Switch to FM AUTO and adjust VR07 until the received wave form becomes half of the maximum form.
10. SIGNAL LED ADJUSTMENT	Same as above	Same as above	Front Panel SIGNAL Level LED Display	Adjust VR02 until the fifth signal LED partly lights up.
11. FM AUTO STOP LEVEL ADJUSTMENT	Set generator to 98 MHz. Adjust ATT output for 10 μ V. (20 dB)	Same as above	Connect DC V.T.V.M. to TP 8 and TP 9.	Adjust VR03 until V.T.V.M. reads 0 V.

FM TUNER ALIGNMENT

— Continued —

ITEM	GENERATOR	DIAL SETTING	INDICATOR	PROCEDURE
12. FM STEREO SIGNAL SEPARATION CONTROL	Connect FM stereo SG to FM ANT terminals. 19 kHz signal ON. Main channel, sub channel signal ON. Apply 1000 Hz signal from LEFT channel.		Scope and AC V.T.V.M. to RIGHT Record Out jack.	Adjust VR05 for minimum output.
	Same as above for RIGHT channel		Scope and AC V.T.V.M. to LEFT Record Out jack.	

AM-FM TUNER BOARD LAYOUT ALIGNMENT POINTS



CHANNEL SPACE CHANGE-OVER IN SYNTHESIZER TUNER

Frequency spaces in FM/AM Synthesizer Tuner are made at every 50 kHz (FM) and 9 kHz (AM) point. The above frequency spaces can be changed over to 100 kHz (FM) and 10 kHz (AM) points when used in U.S.A. Change the spaces by the following procedures.

1. Turn off the power switch.
2. Remove R94 (100 k-ohm). (Fig. 1).
3. Connect Pin No. 6 of IC06 (TC9137P) to GND with a jumper lead. (Fig. 2).

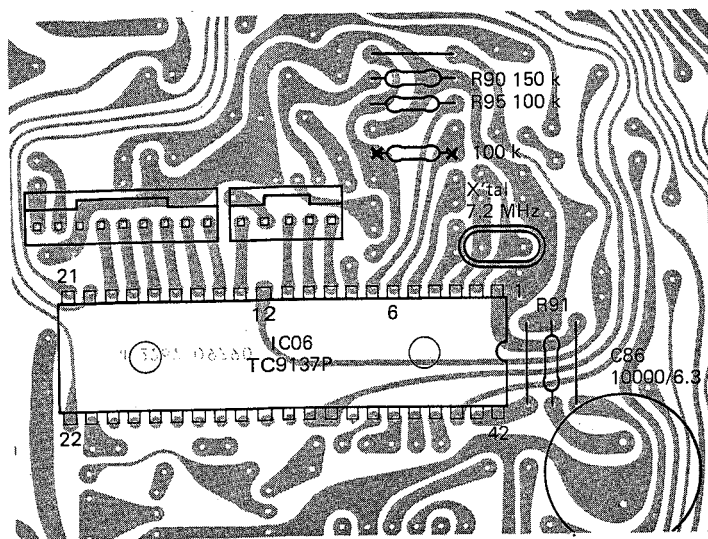


Fig. 1

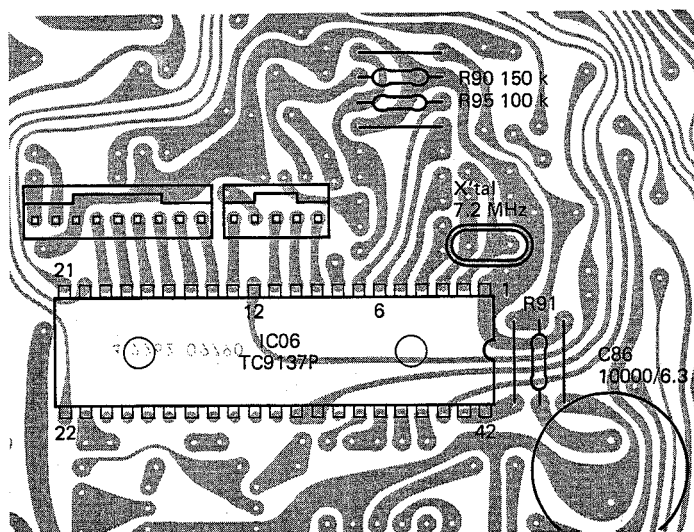


Fig. 2

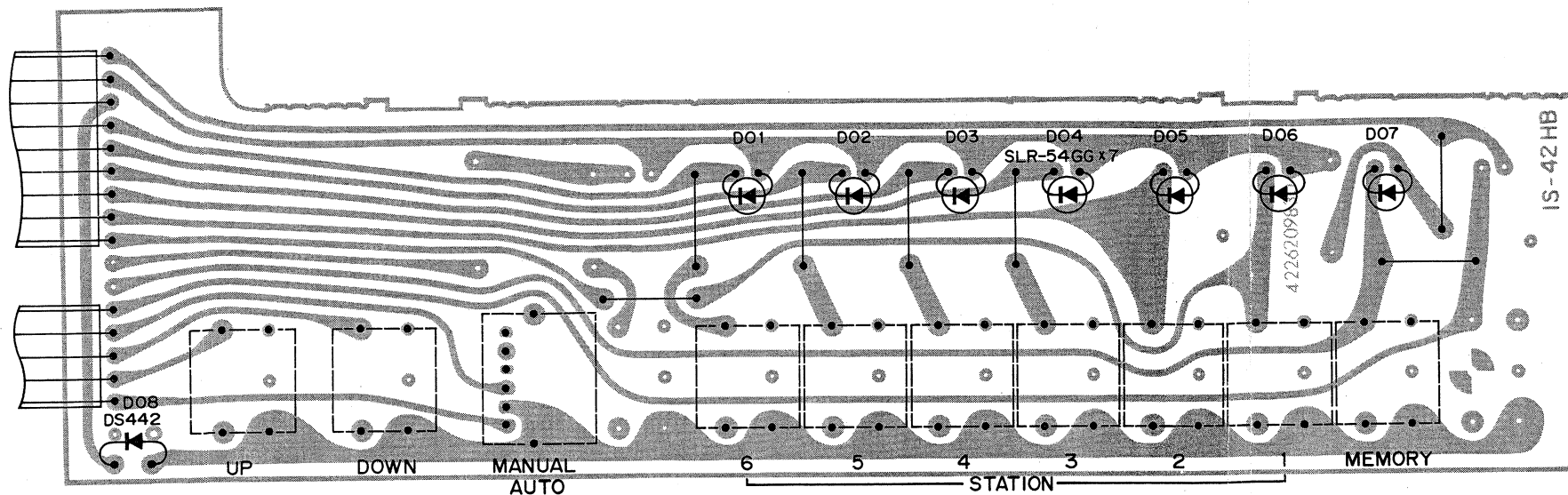
(BOTTOM VIEW)



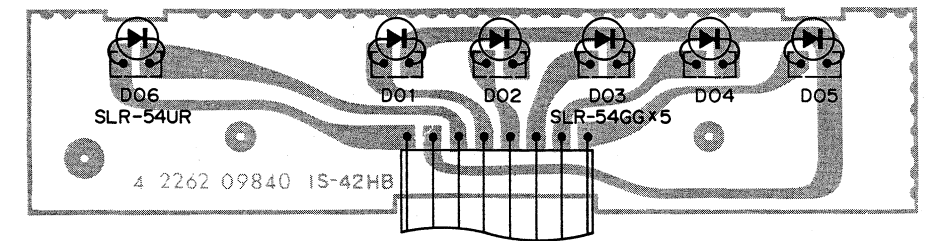
TRANSISTOR DC VOLTAGES

IC PIN NUMBERS DC VOLTAGES

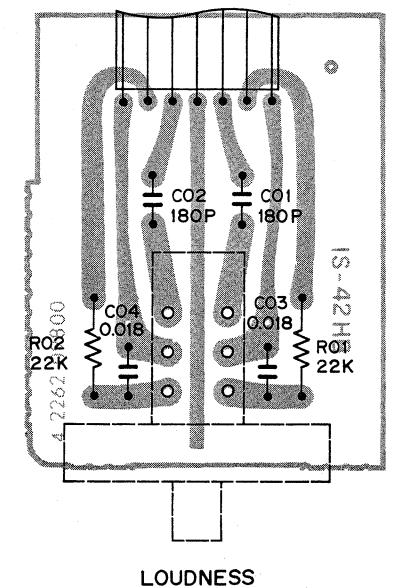
PRESET SWITCH P.C.BOARD
(BOTTOM VIEW)



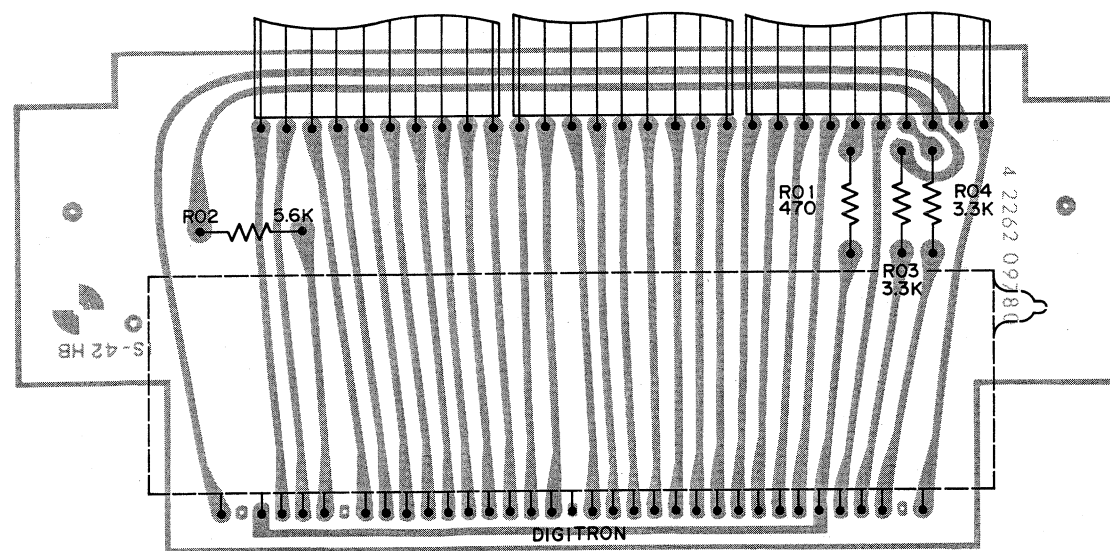
L.E.D. P.C.BOARD
(BOTTOM VIEW)



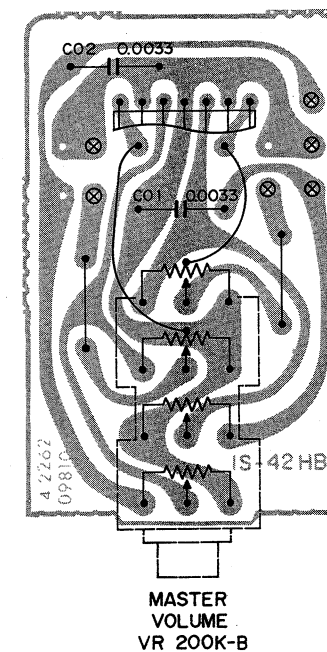
LOUDNESS SWITCH P.C.BOARD
(BOTTOM VIEW)



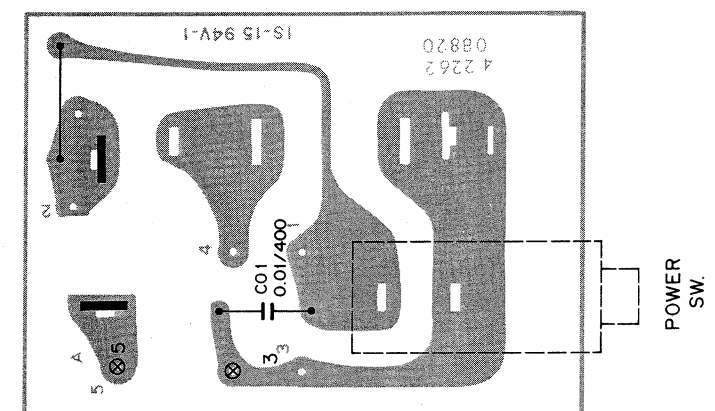
DIGITRON P.C.BOARD
(BOTTOM VIEW)



MASTER VR P.C.BOARD
(BOTTOM VIEW)



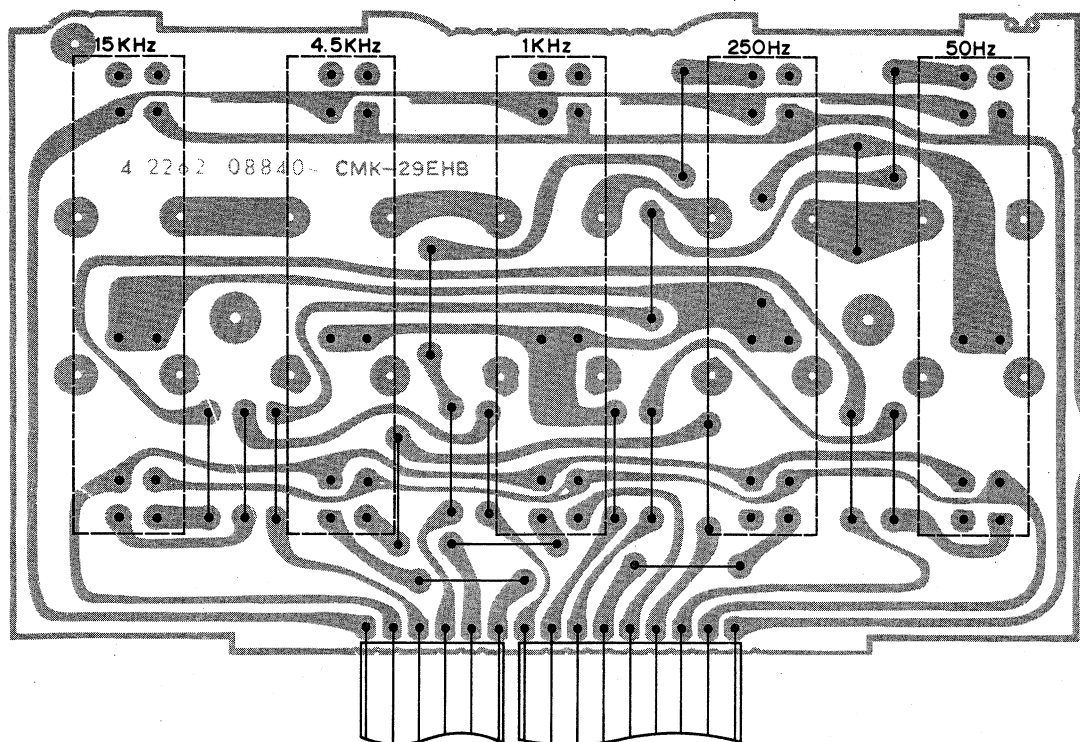
POWER SWITCH P.C.BOARD
(BOTTOM VIEW)



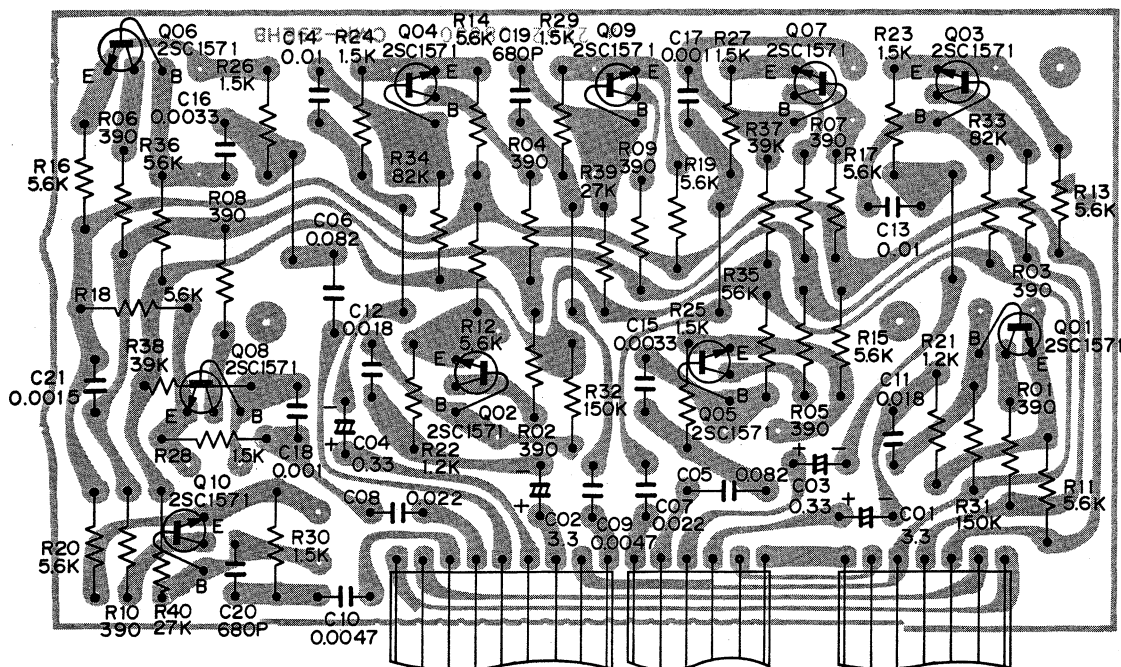
L.E.D. INDICATOR P.C.BOARD
(BOTTOM VIEW)



VOLUME ARRAY P.C.BOARD (BOTTOM VIEW)



EQUALIZER P.C.BOARD (BOTTOM VIEW)



TRANSISTOR DC VOLTAGES									
SYMBOL No.	DEVICE	B	C	E	SYMBOL No.	DEVICE	B	C	E
Q01,02	2SC1571	-1.2V	15.4V	-1.8V	Q07,08	2SC1571	-0.3V	15.4V	-1.0V
Q03,04	2SC1571	-0.6V	15.4V	1.3V	Q09,10	2SC1571	-0.2V	15.4V	-0.9V
Q05,06	2SC1571	-0.5V	15.4V	-1.1V					

PARTS LIST

RF/IF/AF P.C.B. Assy
131 0 4001 08432

[illegible]

PARTS LIST (Continued)

Ref. No.	Parts Number	Description
CAPACITORS		
C91	C1HCZM102DPA	Ceramic 1000 pF 50V ±20%
C101,102	C1HCZJ101SPA	Ceramic 100 pF 50V ±5%
C103,104	C1HRE-105AL	Electrolytic 1 μF 50V
C105,106	C1HCZJ101SPA	Ceramic 100 pF 50V ±5%
C107,108	C1CRY-476APA	Electrolytic 47 μF 16V
C109,110	C1HFYK472APA	Mylar 0.0047 μF 50V ±10%
C111,112	C1HFYK183APA	Mylar 0.018 μF 50V ±10%
C113,114	C1ERY-475APA	Electrolytic 4.7 μF 25V
C115,116	C1ERY-107APA	Electrolytic 100 μF 25V
C117,118	C1HRY-105APA	Electrolytic 1 μF 50V
C119,120	C1ERY-475APA	Electrolytic 4.7 μF 25V
121,122		
123,124		
C125,126	C1HCZJ100SPA	Ceramic 10 pF 50V ±5%
C127,128	C1ERY-475APA	Electrolytic 4.7 μF 25V
C129,130	C1VRY-226APA	Electrolytic 22 μF 35V
C131,132	C1HRY-105APA	Electrolytic 1 μF 50V
C133,134	C1HCZJ121SPA	Ceramic 120 pF 50V ±5%
C135,136	C1HCZM1R5SPA	Ceramic 1.5 pF 50V ±20%
C137,138	C1VRE-107A	Electrolytic 100 μF 35V
C139,140	C1HRY-476APA	Electrolytic 47 μF 50V
C141,142	C1HFRK104A	Mylar 0.1 μF 50V ±10%
C143,144	C1HRY-106APA	Electrolytic 10 μF 50V
C145	C1HRE-107A	Electrolytic 100 μF 50V
C146	C0JRY-107APA	Electrolytic 100 μF 6.3V
C147,149	4 2232 00430	Ceramic 0.01 μF×2 250V
C150	C1ERE-227A	Electrolytic 220 μF 25V
C152,153	C1ERE-108A	Electrolytic 1000 μF 25V
C154	C1ERE-227A	Electrolytic 220 μF 25V
C155	C1ERY-106APA	Electrolytic 10 μF 25V
C157	C1CRY-106APA	Electrolytic 10 μF 16V
C158	C1ARY-107APA	Electrolytic 100 μF 10V
C160	C1HRE-337A	Electrolytic 330 μF 50V
C161	C1HRE-107A	Electrolytic 100 μF 50V
C162	C1HRY-106APA	Electrolytic 10 μF 50V
C163	C1CCZN223YPA	Ceramic 0.022 μF 16V ±30%
C164	C1VRE-107A	Electrolytic 100 μF 35V
C165,166	C2HYSP103A	Ceramic 0.01 μF 500V +100,-0%
C167	4 2232 00430	Ceramic 0.01 μF×2 250V
C168	4 2232 00380	Electrolytic 6800 μF 50V
C169	C1VRE-227A	Electrolytic 220 μF 35V
C170	C1ERY-106APA	Electrolytic 10 μF 25V
C171	C1ERY-107APA	Electrolytic 100 μF 25V
C172	4 2232 00380	Electrolytic 6800 μF 50V
C173	C1VRE-227A	Electrolytic 220 μF 35V
C174	C1ERY-106APA	Electrolytic 10 μF 25V
C175	C1ERY-107APA	Electrolytic 100 μF 25V
C176	C2HYSP103A	Ceramic 0.01 μF 500V +100,-0%
C177	C1HAEM476D	Electrolytic 47 μF 50V ±20%
C178,179	C1HCZN472XPA	Ceramic 0.0047 μF 50V ±30%
C180,181	C1CRE-106A	Electrolytic 10 μF 16V

Ref. No.	Parts Number	Description
SEMICONDUCTORS		
If it is necessary to repair or replace Variable Capacitor Diode FM (D01,02,03) SVC211, or AM (D10,11) SVC321, replace each group with a group which has equivalent characteristics. Do not open the pouch before a repair work is exercised and each component is assembled into the unit, or mixing of the components may result.		
D01,02	202 5 1250 21110	Diode, SVC211SP
03		
D04,05	205 5 9040 44210	Diode, DS-442
06,07		
08,09		
D10,11	202 5 1260 321212	Diode, SVC321
D12,13	205 5 9040 44210	Diode, DS-442
14,15		
16,17		
18,19		
20,21		
D22	202 5 3210 05110	Diode, GZA5.1L
D23,25	205 5 9040 44210	Diode, DS-442
26,27		
28,29		
D30,31	202 5 2470 13540	Diode, DS135D
32,33		
D34	202 5 3210 13020	Diode, GZA13U
D35	202 5 3210 06220	Diode, GZA6.2U
D36	202 5 3220 36010	Diode, GZA36
D37	202 5 3220 30010	Diode, GZA30
D39	202 5 3200 02010	Diode, GZA2.0
D40	202 5 2720 04015	Diode, DBA40C
D41,42	202 5 3210 22020	Diode, GZA22U
D43	202 5 2470 13540	Diode, DS135D
D44	205 5 9040 44210	Diode, DS-442
D45	202 5 3210 06820	Diode, GZA6.8U
IC01	1KK-HA11225	IC, HA11225
IC02	206 5 0191 24510	IC, LA1245
IC03	1KK-HA1196	IC, HA1196
IC04	206 5 2341 41610	IC, LB1416
IC05	ITT-TD6104P	IC, TD6104P
IC06	ITT-TC9137P	IC, TC9137P
IC07	ITT-TD6301P	IC, TD6301P
IC08,09	IJJ-NJM4558DX	IC, NJM4558DX
IC10	206 5 5010 46520	IC, STK465SA
Q01	203 5 5200 21250	TR 2SK212 E
Q02	TKK-2SC535-B	TR 2SC535 B, C
Q03	203 5 5500 93040	TR 2SC930 D, E
Q04	203 5 5200 21250	FET 2SK212 E, F
Q05	203 5 5500 93040	TR 2SC930 D,E
Q06,07	203 5 5000 53660	TR 2SC536 F, G
08,09		
Q10	TTT-2SK30A-O	FET 2SK30A O
Q11	TTT-2SC1000GBL	TR 2SC1000 G
Q12	203 5 4570 73462	TR 2SD734F
Q13,14	203 5 5000 53660	TR 2SC536 F, G
15,16		
Q17,18	203 5 5251 57169	TR 2SC1571 FL, GL
Q19,20	203 5 5000 53660	TR 2SC536 F, G
21,22		


PARTS LIST (Continued)

Ref. No.	Parts Number	Description
SEMICONDUCTORS		
Q23	203 5 7252 27450	TR 2SC2274 E, F
Q24	203 5 6810 65940	TR 2SA659 D, E
Q25	203 5 8570 33040	TR 2SD330 D, E
Q26	203 5 5000 53660	TR 2SC536 F, G
Q27	203 5 5251 57070	TR 2SC1570 G, H
RESISTORS		
R01	R2EDZJ104APA	Carbon 100k 1/4W ±5%
R02	R2EDZJ100APA	Carbon 10 1/4W ±5%
R03	R2EDZJ104APA	Carbon 100k 1/4W ±5%
R04	R2EDZJ472APA	Carbon 4.7k 1/4W ±5%
R05	R2EDZJ223APA	Carbon 22k 1/4W ±5%
R06	R2EDZJ102APA	Carbon 1k 1/4W ±5%
R07	R2EDZJ100APA	Carbon 10 1/4W ±5%
R08	R2EDZJ681APA	Carbon 680 1/4W ±5%
R09	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R10	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%
R11	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R12	R2EDZJ104APA	Carbon 100k 1/4W ±5%
R13	R2EDZJ102APA	Carbon 1k 1/4W ±5%
R14	R2EDZJ104APA	Carbon 100k 1/4W ±5%
R15	R2HZPK330A	Fuse 33 1/2W ±10%
R16	R2EDZJ391APA	Carbon 390 1/4W ±5%
R17	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%
R18	R2EDZJ471APA	Carbon 470 1/4W ±5%
R19	R2EDZJ821APA	Carbon 820 1/4W ±5%
R20	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R21	R2EDZJ331APA	Carbon 330 1/4W ±5%
R22	R2EDZJ104APA	Carbon 100k 1/4W ±5%
R23	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R24	R2EDZJ393APA	Carbon 39k 1/4W ±5%
R25	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R26	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%
R27	R2EDZJ823APA	Carbon 82k 1/4W ±5%
R28	R2EDZJ4R7APA	Carbon 4.7 1/4W ±5%
R29	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%
R30	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R31	R2EDZJ563APA	Carbon 56k 1/4W ±5%
R32	R2EDZJ221APA	Carbon 220 1/4W ±5%
R33	R2EDZJ152APA	Carbon 1.5k 1/4W ±5%
R34	R2EDZJ100APA	Carbon 10 1/4W ±5%
R35	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%
R36	R2HCPK560A	Solid 56 1/2W ±10%
R37	R2EDZJ152APA	Carbon 1.5k 1/4W ±5%
R38	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%
R39	R2EDZJ392APA	Carbon 3.9k 1/4W ±5%
R40	R2EDZJ4R7APA	Carbon 4.7 1/4W ±5%
R41	R2EDZJ104APA	Carbon 100k 1/4W ±5%
R42	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R43	R2EDZJ820APA	Carbon 82 1/4W ±5%
R44	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R45	R2EDZJ104APA	Carbon 100k 1/4W ±5%
R46	R2EDZJ563APA	Carbon 56k 1/4W ±5%
R47	R2EDZJ473APA	Carbon 47k 1/4W ±5%
R48	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R49	R2EDZJ473APA	Carbon 47k 1/4W ±5%
R50	R2EDZJ393APA	Carbon 39k 1/4W ±5%

Ref. No.	Parts Number	Description
RESISTORS		
R52	R2EDZJ154APA	Carbon 150k 1/4W ±5%
R53	R2EDZJ563APA	Carbon 56k 1/4W ±5%
R54	R2EDZJ332APA	Carbon 3.3k 1/4W ±5%
R55	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%
R56	R2EDZJ152APA	Carbon 1.5k 1/4W ±5%
R57	R2EDZJ104APA	Carbon 100k 1/4W ±5%
R58	R2EDZJ4R7APA	Carbon 4.7 1/4W ±5%
R59,60	R2EDZJ333APA	Carbon 33k 1/4W ±5%
R61,62	R2EDZJ473APA	Carbon 47k 1/4W ±5%
R63,64	R2EDZJ332APA	Carbon 3.3k 1/4W ±5%
R65,66	R2EDZJ562APA	Carbon 5.6k 1/4W ±5%
R67	R2EDZJ224APA	Carbon 220k 1/4W ±5%
R68	R2EDZJ104APA	Carbon 100k 1/4W ±5%
R69	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R70	R2EDZJ102APA	Carbon 1k 1/4W ±5%
R71	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%
R72	R2EDZJ223APA	Carbon 22k 1/4W ±5%
R73	R2EDZJ184APA	Carbon 180k 1/4W ±5%
R74	R2EDZJ153APA	Carbon 15k 1/4W ±5%
R75	R2EDZJ154APA	Carbon 150k 1/4W ±5%
R76	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R77	R2EDZJ333APA	Carbon 33k 1/4W ±5%
R78	R2EDZJ153APA	Carbon 15k 1/4W ±5%
R79	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R80	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R81	R2EDZJ102APA	Carbon 1k 1/4W ±5%
R82	R2EDZJ562APA	Carbon 5.6k 1/4W ±5%
R83	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R84,85	R2EDZJ272APA	Carbon 2.7k 1/4W ±5%
R86	R2EDZJ393APA	Carbon 39k 1/4W ±5%
R87	R2EDZJ154APA	Carbon 150k 1/4W ±5%
R88	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R89	R2EDZJ333APA	Carbon 33k 1/4W ±5%
R90	R2EDZJ154APA	Carbon 150k 1/4W ±5%
R91	R2EDZJ331APA	Carbon 330 1/4W ±5%
R92,93	R2EDZJ104APA	Carbon 100k 1/4W ±5%
95		
R96	R2EDZJ683APA	Carbon 68k 1/4W ±5%
R97	R2HCPK222A	Solid 2.2k 1/2W ±10%
R98,99	R2EDZJ151APA	Carbon 150 1/4W ±5%
R100	R2EDZJ224APA	Carbon 220k 1/4W ±5%
R101,102	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R103	R2EDZJ473APA	Carbon 47k 1/4W ±5%
R104	R2EDZJ682APA	Carbon 6.8k 1/4W ±5%
R105	R2EDZJ104APA	Carbon 100k 1/4W ±5%
R106	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R107,108	R2EDZJ562APA	Carbon 5.6k 1/4W ±5%
R109,110	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R111	R2EDZJ471APA	Carbon 470 1/4W ±5%
R112	R2EDZJ103APA	Carbon 10k 1/4W ±5%
R113	R2EDZJ561APA	Carbon 560 1/4W ±5%
R115	R2EDZJ562APA	Carbon 5.6k 1/4W ±5%
R116	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%
R201,202	R2EDZJ152APA	Carbon 1.5k 1/4W ±5%
R203,204	R2EDZJ104APA	Carbon 100k 1/4W ±5%
205,206		
R207,208	R2EDZJ271APA	Carbon 270 1/4W ±5%
R209,210	R2EDZJ153APA	Carbon 15k 1/4W ±5%

PARTS LIST (Continued)

DIGITRON P.C.B. Assy
131 0 4001 08420

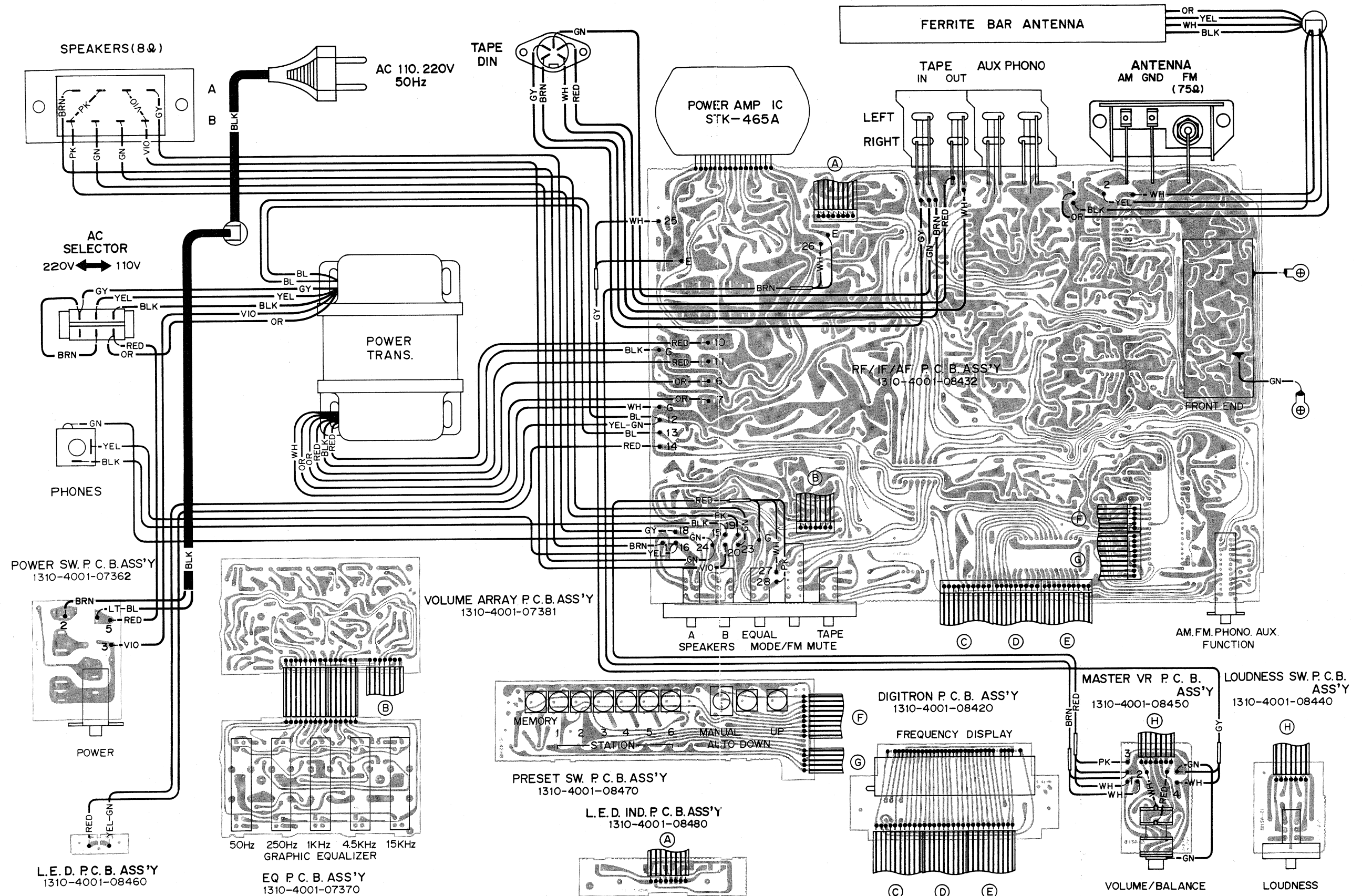
Ref. No.	Parts Number	Description	Ref. No.	Parts Number	Description
RESISTORS					
R211,212	R2EDZJ224APA	Carbon 220k 1/4W ±5%		4 2142 00071	Digitron
R213,214	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%	131 0 4006 22264	Cord Assy	
R215,216	R2EDZJ104APA	Carbon 100k 1/4W ±5%	131 0 4006 22265	Cord Assy	
R217,218	R2EDZJ102APA	Carbon 1k 1/4W ±5%	131 2 5205 22502	Cushion	
219,220			RESISTORS		
R221,222	R2EDZJ334APA	Carbon 330k 1/4W ±5%	R01	R2EDZJ471APA	Carbon 470 1/4W ±5%
R223,224	R2EDZJ104APA	Carbon 100k 1/4W ±5%	R02	R2EDZJ562APA	Carbon 5.6k 1/4W ±5%
R225,226	R2EDZJ471 APA	Carbon 470 1/4W ±5%	R03,04	R2EDZJ332APA	Carbon 3.3k 1/4W ±5%
R227,228	R2EDZJ104APA	Carbon 100k 1/4W ±5%	PRESET SW P.C.B. Assy		
229,230			131 0 4001 08470		
R231,232	R2EDZJ562APA	Carbon 5.6k 1/4W ±5%	Ref. No.	Parts Number	Description
R233,234	R2EDZJ392APA	Carbon 3.9k 1/4W ±5%		4 2312 02750	Key Board Switch
R235,236	R2EDZJ224APA	Carbon 220k 1/4W ±5%		4 2312 04620	Switch Push 1Key
R237,238	R2EDZJ472APA	Carbon 4.7k 1/4W ±5%		131 0 4006 22217	Cord Assy
R239,240	R2EDZJ471 APA	Carbon 470 1/4W ±5%		131 0 4006 22266	Cord Assy
R241,242	R2EDZJ4R7 APA	Carbon 4.7 1/4W ±5%		131 2 4208 33600	Spacer
R243,244	R2EDZJ104APA	Carbon 100k 1/4W ±5%	SEMICONDUCTORS		
R245,246	4 2212 00130	Metallized Paper 0.33 2W	D01 ~ 07	DYY-SLR-54GG	L.E.D., SLR-54GG (Green)
R247,248	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%	D08	205 5 9040 44210	Diode, DS-442
R249,250	R2EDZJ563APA	Carbon 56k 1/4W ±5%	POWER SWITCH P.C.B. Assy		
R251,252	R2EDZJ102APA	Carbon 1k 1/4W ±5%	131 0 4001 07362		
R253,254	R2EDZJ332APA	Carbon 3.3k 1/4W ±5%	Ref. No.	Parts Number	Description
R255,256	R2EDZJ333APA	Carbon 33k 1/4W ±5%		4 2312 05060	Switch Push Power
R257,258	R2EDZJ331 APA	Carbon 330 1/4W ±5%	CAPACITOR		
R259,260	R2HZPK100A	Fuse 10 1/2W ±10%	C01	C2GYDP103A-S	Ceramic 0.01 μF 400V +100,—0%
R261	R3DXBJ331A	Oxide Metal Film 330 2W ±5%	EQ P.C.B. Assy		
R262	R2EDZJ184APA	Carbon 180k 1/4W ±5%	131 0 4001 07370		
R263	R2EDZJ223APA	Carbon 22k 1/4W ±5%	Ref. No.	Parts Number	Description
R264	R2HZPK2R2A	Fuse 2.2 1/2W ±10%		131 0 4006 22244	Cord Assy
R265,266	R2EDZJ471 APA	Carbon 470 1/4W ±5%	CAPACITORS		
R267,268	R2EDZJ102APA	Carbon 1k 1/4W ±5%	C01	C1HRY-335LPA	Electrolytic 3.3 μF 50V
R269	R2HZPK4R7A	Fuse 4.7 1/2W ±10%	C02	C1HRE-335AL	Electrolytic 3.3 μF 50V
R270	R2EDZJ152APA	Carbon 1.5k 1/4W ±5%	C03,04	C1HRE-334AL	Electrolytic 0.33 μF 50V
R271	R2EDZJ471 APA	Carbon 4.7 1/4W ±5%	C05,06	C1HFRK823A	Mylar 0.082 μF 50V ±10%
R272	R2HCPK681A	Solid 680 1/2W ±10%	C07,08	C1HFKYK223APA	Mylar 0.022 μF 50V ±10%
R273	R2EDZJ103APA	Carbon 10k 1/4W ±5%	C09	C1HFRK472A	Mylar 0.0047 μF 50V
R274	R2EDZJ223APA	Carbon 22k 1/4W ±5%	C10	C1HFKYK472APA	Mylar 0.0047 μF 50V ±10%
R275	R2EDZJ103APA	Carbon 10k 1/4W ±5%	C11	C1HFRK183A	Mylar 0.018 μF 50V ±10%
R276	R2EDZJ100APA	Carbon 10 1/4W ±5%	VOLUME ARRAY P.C.B. Assy		
R277	R2HZPK101A	Fuse 100 1/2W ±10%	131 0 4001 07381		
R279	R2HZPK220A	Fuse 22 1/2W ±10%	Ref. No.	Parts Number	Description
R280	R2EDZJ102APA	Carbon 1k 1/4W ±5%		4 2222 02170	VR Slide 250k-Gx2
R281	R2EDZJ101 APA	Carbon 100 1/4W ±5%	PRODUCT SAFETY NOTICE		
R282	R2EDZJ4R7 APA	Carbon 4.7 1/4W ±5%	PRODUCT SAFETY SHOULD BE CONSIDERED WHEN A COMPONENT REPLACEMENT IS MADE IN ANY AREA OF AN UNIT. COMPONENTS INDICATED BY A MARK  IN THIS PARTS LIST AND THE SCHEMATIC DIAGRAM SHOW COMPONENTS WHOSE VALUE HAS SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. IT IS PARTICULARLY RECOMMENDED THAT ONLY PARTS SPECIFIED ON THE FOLLOWING PARTS LIST BE USED FOR COMPONENT REPLACEMENT POINTED OUT BY THE MARK.		
R283	R2HZPKR220A	Fuse 22 1/2W ±10%			
R284	R2EDZJ102APA	Carbon 1k 1/4W ±5%			
R285	R2EDZJ101 APA	Carbon 100 1/4W ±5%			
R286	R2EDZJ4R7 APA	Carbon 4.7 1/4W ±5%			
R287,288	R2HCPK561A	Solid 560 1/2W ±10%			
R289,290	R2EDZJ331 APA	Carbon 330 1/4W ±5%			
R291,292	R2EDZJ681 APA	Carbon 680 1/4W ±5%			
R293	R2EDPJ683A	Carbon 68k 1/4W ±5%			
R294	R2HCPK100A	Solid 10 1/2W ±10%			
R295,296	R2EDZJ334APA	Carbon 330k 1/4W ±10%			

PARTS LIST (Continued)

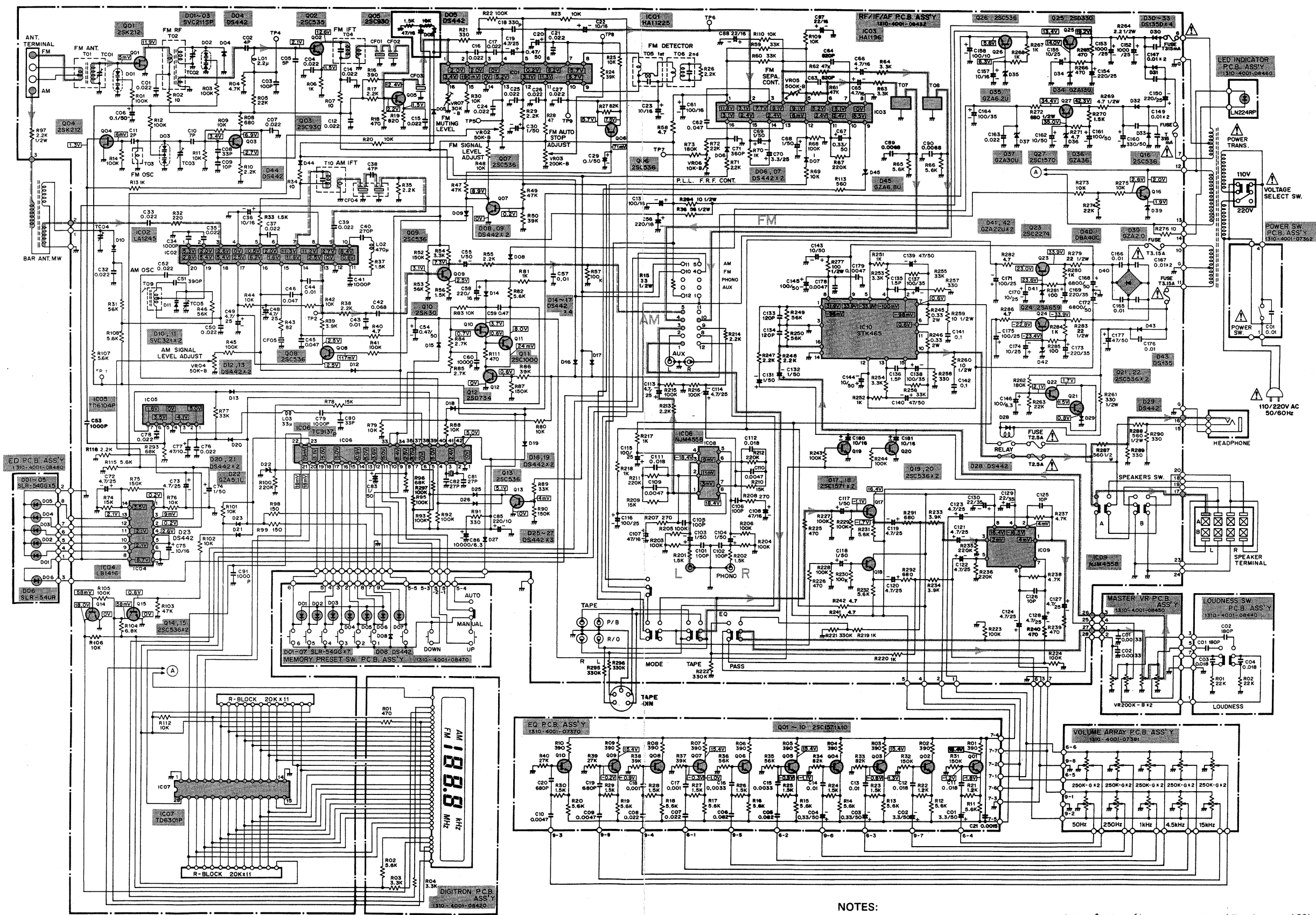
L.E.D. P.C.B. Assy
131 0 4001 08480

Ref. No.	Parts Number	Description	Ref. No.	Parts Number	Description
CAPACITORS			131 0 4006 22203 Cord Assy		
C12	C1HFYK183APA	Mylar 0.018 μF 50V ±10%	131 2 4208 34400 Spacer		
C13,14	C1HFYK103APA	Mylar 0.01 μF 50V ±10%	SEMICONDUCTORS		
C15	C1HFRK332A	Mylar 0.0033 μF 50V ±10%	D01 ~ 05	DYY-SLR-54GG	L.E.D., SLR-54GG (Green)
C16	C1HFYK332APA	Mylar 0.0033 μF 50V ±10%	D06	DYY-SLR-54UR	L.E.D., SLR-54UR (Red)
C17,18	C1HFYK102APA	Mylar 0.001 μF 50V ±10%	L.E.D. INDICATOR P.C.B. Assy		
C19,20	C1HYYK681RPA	Ceramic 680 pF 50V ±10%	131 0 4001 08460		
C21	C1HFYK152APA	Mylar 0.0015 μF 50V ±10%	Ref. No. Parts Number Description		
SEMICONDUCTORS			131 2 4208 31400 Spacer		
Q01,02	203 5 5251 57169	TR 2SC1571 FL, GL	SEMICONDUCTOR		
03,04			D01	DWW-LN224RP	L.E.D., LN224RP (Red)
05,06			MASTER VR P.C.B. Assy		
07,08			131 0 4001 08450		
09,10			Ref. No. Parts Number Description		
RESISTORS			4 2222 02380 VR 200k-Bx2, 250k-MN		
R01,02	R2EDZJ391APA	Carbon 390 1/4W ±5%	CAPACITORS		
03,04			C01,02	C1HCZN332XPA	Ceramic 0.0033 μF 50V ±30%
05,06			LOUDNESS SWITCH P.C.B. Assy		
07,08			131 0 4001 08440		
09,10			Ref. No. Parts Number Description		
R11,12	R2EDZJ562APA	Carbon 5.6k 1/4W ±5%	4 2312 02311 Switch Push 1Key		
13,14			CAPACITORS		
15,16			C01,02	C1HCYK181APA	Ceramic 180 pF 50V ±10%
17,18			C03,04	C1HFYK183APA	Mylar 0.018 μF 50V ±10%
19,20			RESISTORS		
R21,22	R2EDZJ122APA	Carbon 1.2k 1/4W ±5%	R01,02	R2EDZJ223APA	Carbon 22k 1/4W ±5%
R23,24	R2EDZJ152APA	Carbon 1.5k 1/4W ±5%			
25,26					
27,28					
29,30					
R31,32	R2EDZJ154APA	Carbon 150k 1/4W ±5%			
R33,34	R2EDZJ823APA	Carbon 82k 1/4W ±5%			
R35,36	R2EDZJ563APA	Carbon 56k 1/4W ±5%			
R37,38	R2EDZJ393APA	Carbon 39k 1/4W ±5%			
R39,40	R2EDZJ273APA	Carbon 27k 1/4W ±5%			
VOLUME ARRAY P.C.B. Assy					
131 0 4001 07381					

POINT TO POINT WIRING DIAGRAM



SCHEMATIC DIAGRAM



NOTES:

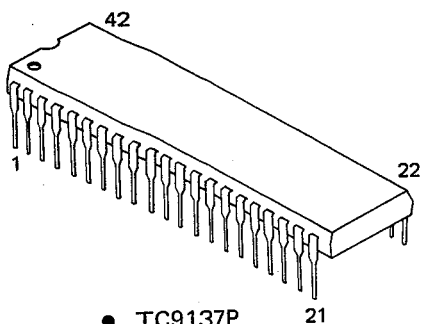
- NOTES:
1. All resistors values are indicated in "ohm" ($K=10^3$, $M=10^6$).
 2. All capacitors values are indicated in " μF " ($P=10^{-12}$).
 3. All voltages indicated on the schematics are measured under the following conditions.
 - a. Use a V.T.V.M.
 - b. All voltages $\pm 10\%$ with respect to chassis ground
 - c. No signals at input terminals
 - d. AC input at 220 volts 50 Hz
 4. This is a basic schematic diagram.

Because Fisher products are subject to continuous improvement, Fisher Corporation reserves the right to make any changes or modifications without notice.

SEMICONDUCTOR LEAD IDENTIFICATION

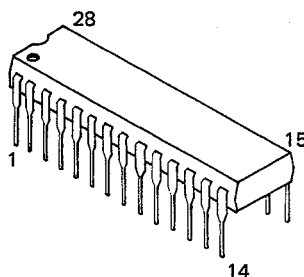
INTEGRATED CIRCUITS

PLL CONTROL IC



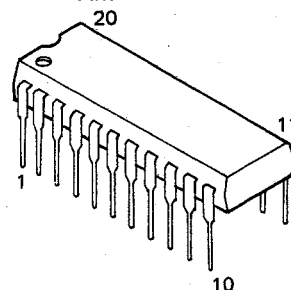
• TC9137P

STATIC DRIVER IC



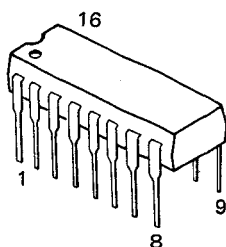
• TD6301P

AM RF IF IC



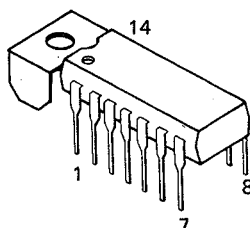
• LA1245

FM IF/MPX IC



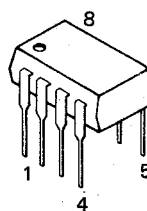
• HA11225
• HA1196

LEVEL METER IC



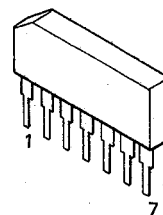
• LB1416

DC AMP IC



• NJM4558

PRE SCALAR IC



• TD6104P

TRANSISTORS



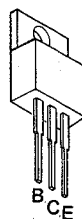
ECB

- 2SC536
- 2SA659
- 2SD734
- 2SC1570
- 2SC1571
- 2SC1000
- 2SC930
- 2SC2274



DSG

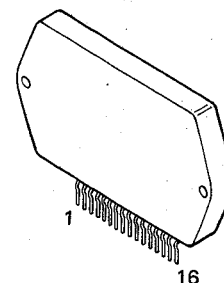
- 2SK212
- 2SK30A



B-C-E

• 2SD330

POWER AMPLIFIER IC



• STK465A

DIODES

Cathode



Anode

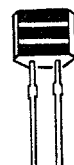
• DS-135D

Cathode



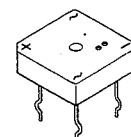
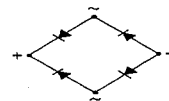
Anode

- DS-442
- GZA22U
- GZA2.0
- GZA13U
- GZA5.1L
- GZA6.2U
- GZA36
- GZA30
- GZA6.8U



Anode Cathode

- SVC321 (AM)
- SVC211 (FM)



• DBA40C